

WHAT IS CLAIMED IS:

1. An ultrasonic imaging system that transmits/receiving an ultrasonic pulse to/from a living body having contrast-imaging microbubbles introduced therein, and forms an image of the living body, the ultrasonic imaging system being constructed such that when  $N$  is taken as an integer of 3 or more, by repeating the transmitting/receiving operations the  $N$  number of times using the transmitted pulse waves each of a different waveform under the same transmitting/receiving focus conditions, the ultrasonic imaging system suppresses pulse transmitting/receiving sensitivity with respect to components ranging from a fundamental wave component of an ultrasonic echo signal derived from an internal soft tissue of the living body, to  $(N-1)$ th-order harmonic component of the ultrasonic echo signal, and thus obtains appropriate pulse transmitting/receiving sensitivity with respect to an ultrasonic echo signal derived from the contrast-imaging microbubbles, wherein:

the system includes a pulse-transmitting amplifier for transmitting the pulse waves to the inside of the living body; and

an input cycle time of a signal applied to the pulse-transmitting amplifier is an integer-multiple of  $N$

with respect to a maximum frequency of frequency components of the transmitted pulse.

2. The system ultrasonic imaging according to claim 1, further comprising a D/A converter to apply the signal to the pulse-transmitting amplifier, wherein a signal output cycle time of the D/A converter is an integer-multiple of  $N$  with respect to the maximum frequency of the frequency components of the transmitted pulse.

3. An ultrasonic imaging system that transmits/receiving an ultrasonic pulse to/from a living body having contrast-imaging microbubbles introduced therein, and forms an image of the living body, the ultrasonic imaging system being constructed such that when  $N$  is taken as an integer of 3 or more, by repeating the transmitting/receiving operations the  $N$  number of times using the transmitted pulse waves each of a different waveform under the same transmitting/receiving focus conditions, the ultrasonic imaging system suppresses pulse transmitting/receiving sensitivity with respect to components ranging from a fundamental wave component of an ultrasonic echo signal derived from an internal soft tissue of the living body, to  $(N-1)$ th-order harmonic component of the ultrasonic echo signal, and thus obtains appropriate pulse transmitting/receiving sensitivity with respect to an ultrasonic echo signal derived from the contrast-imaging

microbubbles, wherein the transmitted pulse wave has a waveform formed by summing a fundamental wave and second-order harmonics associated with the fundamental wave.

4. An ultrasonic imaging system that transmits/receives an ultrasonic pulse to/from a living body having contrast-imaging microbubbles introduced therein, and forms an image of the inside of the living body, the ultrasonic imaging system providing:

an imaging sequence in which, by repeating the pulse transmitting/receiving operations three times using the transmitted pulse waves each of a different waveform under the same transmitting/receiving focus conditions, the ultrasonic imaging system suppresses pulse transmitting/receiving sensitivity with respect to components ranging from a fundamental wave component of an ultrasonic echo signal derived from a soft tissue of the living body, to second-order harmonic component of the echo signal, and selectively obtains pulse transmitting/receiving sensitivity with respect to an ultrasonic echo signal derived from the contrast-imaging microbubbles; and

another imaging sequence in which, by repeating the transmitting/receiving operations twice using the transmitted pulse waves each of a different waveform under the same transmitting/receiving focus conditions as the

conditions used in the first imaging sequence, the ultrasonic imaging system suppresses pulse transmitting/receiving sensitivity with respect to a fundamental wave component of an ultrasonic echo signal from the soft tissue of the living body, and selectively obtains pulse transmitting/receiving sensitivity with respect to a second-order or subsequent nonlinear signal components;

wherein imaging is implemented using the two sequences selectively as appropriate.

5. The ultrasonic imaging system according to claim 4, wherein transmission amplitude in the imaging sequence in which the transmitting/receiving operations are repeated three times is different from transmission amplitude in the other imaging sequence in which the transmitting/receiving operations are repeated twice.

6. The ultrasonic imaging system according to claim 5, wherein the transmission amplitude in the imaging sequence in which the transmitting/receiving operations are repeated three times is greater than the transmission amplitude in the other imaging sequence in which the transmitting/receiving operations are repeated twice.